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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,096

05/18/2007

Sergej Lopatin

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BACON & THOMAS, PLLC

625 SLATERS LANE

FOURTH FLOOR

ALEXANDRIA, VA 22314-1176

EXAMINER

ROGERS, DAVID A

ART UNIT

PAPER NUMBER

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MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,096	<b>Applicant(s)</b> LOPATIN ET AL.	
	<b>Examiner</b> DAVID A. ROGERS	<b>Art Unit</b> 2856	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 June 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21 is/are allowed.
- 6) ☒ Claim(s) 11-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2008 & 11 May 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 C.F.R. 1.114***

1. A request for continued examination under 37 C.F.R. 1.114, including the fee set forth in 37 C.F.R. 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination, and the fee has been timely paid, the finality of the previous Office action has been withdrawn.

### ***Prior Art Relied Upon***

2. The following is a list of the prior art references relied upon in this office action.

<u>Reference</u>	<u>Patentee/Author</u>
Level Limit Switch - Liquiphant FTL 360/FTL 361	Endress+Hauser
United States Patent 3,760,482	Kawamura
United States Patent 4,920,787	Dual <i>et al.</i>
United States Patent 6,389,891	D'Angelico <i>et al.</i>

### ***Claim Rejections - 35 U.S.C. § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endress+Hauser in view of D'Angelico *et al.* and Kawamura.

Endress+Hauser teaches known mechanical oscillating units having tuning forks are to be secured to a container having a medium (fluid) to be monitored. All three mechanical oscillating units are provided with a securement. Some of the mechanical

oscillating units utilize a flange to secure the mechanical oscillating unit to the container. The mechanical oscillating units will require a driver/receiver to excite the mechanical tuning forks to oscillate, preferably at their resonant frequency. Endress+Hauser does not teach a force detection unit coupled to the securement for detecting reaction moments on the securement that result from the oscillating tuning fork.

Official notice is hereby taken that strain gauges; i.e., force detection units, are well known and used wherever local strain is desired to be measured. Furthermore, strain gauges are known to be used as accelerometers.

D'Angelico *et al.* teach known mechanical oscillators similar to those in Endress+Hauser. This mechanical oscillator will have a mounting means with threads (reference item 7), a driver/receiver (reference item 6), and a tuning fork structure (reference items 3 and 4). D'Angelico *et al.* teaches that the tuning fork's oscillator bars should operate in opposite modes in order to minimize the stresses on the securement. See column 5 (lines 60-65).

Kawamura teaches that it is known to ensure that a mechanical oscillator is operating at a correct frequency; i.e., the movement of the tines of the mechanical oscillator coincide. In order to do this Kawamura teaches that it is known to remove material from the mechanical oscillator in order to obtain the correct frequency. This will require measuring the frequency of the mechanical oscillator before and after the material removal step.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Endress+Hauser with the teachings of D'Angelico *et al.* and Kawamura in order to measure the stresses on the flange (securement) of the

mechanical oscillator of Endress+Hauser using, for example, a known strain gauge for the predicable benefit of measuring the stresses on the flange so that one can determine if the mechanical oscillator is operating at the correct frequency and to make any necessary adjustments to its mechanical properties in order to obtain the correct operating frequency such that the stress on the flange are minimized.

With regard to claim 16 one of ordinary skill will place the known strain gauges on the mounting flange (or any other securement) in a location where the highest stresses may exist when a non-resonant vibration occurs so that, according to D'Angelico *et al.*, the stresses at that location can be minimized.

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endress+Hauser, D'Angelico *et al.*, and Kawamura applied to claim 15 above, and further in view of Dual *et al.*

Endress+Hauser, D'Angelico *et al.*, and Kawamura teach the testing and tuning of an oscillating member. Endress+Hauser, D'Angelico *et al.*, and Kawamura do not teach an oscillating member having a single rod and detection using an accelerometer.

Dual *et al.* teaches that oscillating members that operate in a fluid can comprise a single rod (reference item 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Endress+Hauser, D'Angelico *et al.*, and Kawamura with the teachings of Dual *et al.* in order to substitute one type of mechanical oscillator with another for the predicable benefit of measuring a fluid property.

***Allowable Subject Matter***

6. Claim 21 is allowed.

***Response to Arguments***

7. Applicant's arguments filed 23 June 2010 have been fully considered. However, these arguments are considered moot in view of the new ground(s) of rejection.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

United States Patent 4,004,166 to Nakata teaches a mechanical oscillator (reference item 13) coupled to a base (reference item 11) that essentially functions as a securement. A sensor (reference item 27) is coupled to the base to monitor the vibrations that occur as a result of shear forces (reference items A-A' and B-B') and a bending moment (reference item M-M') that "leak" from the mechanical oscillator.

United States Patent 6,647,786 to Ohta *et al.* describes a known mechanical oscillator (reference item 51) having oscillating arms (reference items 52 and 53). The oscillator is mounted to a "stem" (reference item 55) via a support arm (reference item 57) and substrate member (reference item 56). The support arm and substrate member constitute a securing member for the oscillator. On the "stem" is a circuit (reference item 60) for driving the oscillator and for detecting a signal from the oscillator. The above arrangement is a "securement" for the oscillator and a "force detection unit" that is coupled to the "securement" and for detecting the reaction forces; e.g. transmitted vibrations, from the oscillating unit.

United States Patent 6,698,287 to Kubena *et al.* teaches that it is known in the art to adjust a mechanical oscillator's properties. See column 1 (lines 65-67) through column 2 (lines 1-8) along with column 3 (lines 60-67) through column 4 (lines 1-15).

9. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 C.F.R. 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID A. ROGERS whose telephone number is (571)272-2205. The examiner can normally be reached on Monday - Friday (0730 - 1600). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David A. Rogers/  
Primary Examiner, Art Unit 2856